Spent Nuclear Stabilization and Disposition, RL-0012

A. C. Crawford, Vice President and Project Director of SNF Operations/(509) 376-5457
S. M. Sax, Vice President of Sludge Retrieval and Disposition/(509) 372-0000
A. M. Umek, Project Director of Deactivation/ (509) 373-5983

K East Basins - Fuel Transfer System Operations

Canister Storage Building – Multi-Canister Overpack Welding

Sludge Retrieval and Disposition - Test loading large diameter container into casks at K Basins

K West Basins

Fuel Retrieval System

Canister Cleaner Operations

Loading Cask on Trailer at K West

Cold Vacuum Drying Facility – Multi-Canister Overpack Processing

Overview

This section addresses Project Baseline Summary (PBS) RL-0012, *Spent Nuclear Fuel (SNF) Stabilization and Disposition.*

NOTE: Unless otherwise noted, all information contained herein is as of the end of February 2004.

Notable Accomplishments

Sludge Disposition Alternatives: SNF continued its efforts to implement the accelerated sludge disposition option, i.e., retrieve and immobilize sludge in preparation for disposal at the Waste Isolation Pilot Project (WIPP). An engineering study was initiated with British Nuclear Fuels Laboratory to develop the immobilization and packaging formulation for the KE and KW sludge, excluding the KE North Load Out Pit (NLOP) sludge. The immobilization and packaging will be designed to meet the draft remote-handled transuranic waste acceptance criteria. Work also continued at Pacific Northwest National Laboratory to complete the design and construction to immobilize and package the NLOP sludge in accordance with WIPP's existing contact-handled waste acceptance criteria. Startup of the NLOP sludge retrieval and processing will follow the completion of a DOE-approved Operational Readiness Review (ORR), currently projected to be completed in May 2004.

Fuel Transfer System (FTS): SNF completed 29 FTS shipments (290 canisters) during the month of February. As of March 5, 2004, a cumulative total of 276 FTS shipments (2,758 canisters) have been completed.

Fuel Movement Activities: SNF completed nine multi-canister overpack (MCO) shipments containing 51.57 metric tons of heavy metal (MTHM) from the K West Basin to the Cold Vacuum Drying Facility during February. As of March 5, 2004, a cumulative total of 311 MCOs containing an estimated 1,697 MTHM have been shipped.

MCO Welding at the Canister Storage Building (CSB): SNF welded and "N" stamped 8 MCOs during February. As of March 5, 2004, a cumulative total of 149 MCOs were welded and "N" stamped, which is 14 MCOs ahead of the baseline schedule.

Deactivation: The Grout Performance Specification for the K East Basin Discharge Chute was issued. A Memorandum of Understanding was drafted to document agreements between FH and the Environmental Restoration Contractor regarding requirements related to the reactor-side of the discharge chute. Additionally, a letter has been drafted to obtain formal agreement with the Environmental Protection Agency (EPA) that the KE Basin Discharge Chute grouting will constitute completion of Tri-Party Agreement (TPA) Milestone M-34-23. Procurement of the wash/load-out station and associated equipment in K East was initiated.

Issues

Sludge Retrieval and Disposition: The TPA milestone (M-34-08) to begin K East sludge movement by December 31, 2002, was missed. FH and RL have conducted several briefings to the EPA on the proposed sludge remedy. A Time Critical Remedial Action document has been prepared to allow the disposition of the NLOP sludge retrieval and treatment prior to obtaining a modification to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Record of Decision. Additional discussions, including a new set of TPA milestones set to the new accelerated sludge disposal schedule (if necessary), are in process.

RL has directed FH to proceed with a full ORR for the NLOP sludge retrieval and treatment. The original schedule was based upon a contractor readiness assessment. This change in direction will delay the schedule by a minimum of two months.

Fuel Production: As of March 5, 2004, SNF is approximately two weeks behind the FTS production schedule and six weeks behind the MCO production schedule. The combination of degraded fuel and equipment malfunctions have jointly contributed to the FTS and MCO shipment delays. The degraded fuel requires additional washing cycles, causes water treatment filters to plug more frequently, and has resulted in the creation of airborne radiation areas for virtually all work in the basins, including under-water work. FH has established a Process Focus Group to identify process improvements that can improve production efficiency despite the degraded fuel challenges.

FY 2004 FH Funds versus Forecast ($000)

	FY 2004 Anticipated Funding w/Carryover	FY 2004 Fiscal Year Spend Forecast	Variance
SNF Stabilization & Disposition	$ 180,556	$ 186,189	$ (5,633)

The current funding allocation includes moving the Fast Flux Test Facility (FFTF) un-irradiated fuel from the Plutonium Finishing Plant (PFP) to the CSB. It has now been determined that the FFTF un-irradiated fuel will be stored at PFP and shipped directly from PFP to the Savannah River Plant. The FY 2004 funds associated with FFTF fuel movement will be reallocated to other Hanford work priorities.

FY04 Schedule/Cost Performance ($000)

	Budgeted Cost of Work Scheduled	Budgeted Cost of Work Performed	Actual Cost of Work Performed	Schedule Variance $	Schedule Variance %	Cost Variance $	Cost Variance %	Budget At Completion
SNF Stabilization & Disposition	71,354	42,810	72,531	-28,543	-40%	-29,721	-69%	162,394

Numbers are rounded to the nearest $K and include the closure services allocation.

Schedule Variance Analysis (-$28,543K/-40%): The unfavorable schedule variance is due to:

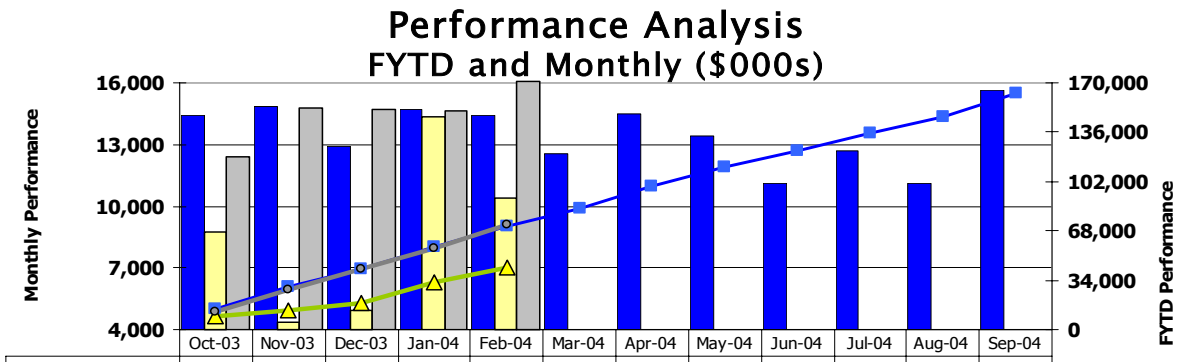
- FTS and MCO shipment delays (-$13,062K);
- RL direction to defer ancillary facilities deactivation to FY 2007 and to stop work not required to support the basins grout and remove option (-$5,435K);
- Late delivery of the final MCO (-$23K);
- Ceasing work associated with the baseline sludge retrieval plan that is inconsistent with the accelerated sludge retrieval and disposition approach (-$5,585K);
- Value of general support activities that are apportioned to the overall project progress for earned value measurement purposes (i.e., surveillance and maintenance, engineering, project management, etc. (-$4,273K); and

The unfavorable schedule variance is partially offset by a favorable variance for MCO welding (+$103K).

Cost Variance Analysis (-$29,721K/-69%): The unfavorable cost variance is due to:

- FTS and MCO shipment delays, i.e., staffing requirements remain unchanged regardless of fuel production levels until fuel production is complete (-$15,315K);
- Unbudgeted K East sludge retrieval readiness preparations (-$4,130K);
- Implementation of the accelerated sludge disposition path prior to implementing baseline adjustments (-$2,625K);
- Inaccurate time-phasing of Sludge Operations budget (-$2,140K);
- Value of general support activities that are apportioned to the overall project progress for earned value measurement purposes (i.e., surveillance and maintenance, engineering, project management, etc.) (-$5, 511K); and
- The cost variance for the spent nuclear fuel portion will slowly self-correct as the fuel continues to be moved. The expected variance upon completion of fuel is expected to be about $11 million, which is directly attributable to the additional four months to support completion of the fuel movement. The majority of the sludge and deactivation variances will be resolved once a baseline change to incorporate the revised scope and schedule is implemented, currently planned for June 2004.

FY 2004 Schedule/Cost Performance (continued)



	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04
Monthly BCWS	14,411	14,822	12,935	14,739	14,447	12,576	14,525	13,379	11,116	12,720	11,109	15,615
Monthly BCWP	8,747	4,354	4,962	14,329	10,418							
Monthly ACWP	12,417	14,751	14,696	14,609	16,059							
FYTD BCWS	14,411	29,233	42,168	56,907	71,354	83,930	98,455	111,834	122,950	135,670	146,779	162,394
FYTD BCWP	8,747	13,101	18,063	32,392	42,810							
FYTD ACWP	12,417	27,168	41,864	56,473	72,531							

Milestone Achievement

Number	Milestone Title	Type (TPA/ DNFSB/PI)	Due Date	Actual Date	Forecast Date	Status/ Comments
M-34-29 (S15-02-001)	Complete K East Basin and K West Basin facility modifications for Alternate Fuel Transfer System casks transportation system	TPA	3/31/02	9/12/02		Complete
M-34-12-T01 (S15-02-001)	Complete construction of SWS (Construction Completion Document Section IIA)	TPA	09/30/02	3/4/03		Complete
M-34-17 (S00-02-901)	Initiate K East to K West fuel transfer	TPA/ Performance Incentive (PI)	11/30/02	11/25/02		Complete
M-34-18A (S03-03-068)	Complete removal of 957 MTHM of SNF from the K West Basin	TPA/DNFSB/ PI	12/31/02	1/7/03		Complete
M-34-08 (S04-02-205)	Initiate full scale K East Basin sludge removal	TPA/DNFSB/ PI	12/31/02		5/15/04	Missed. Will initiate with NLOP following completion of the RL-directed ORR.

Milestone Achievement (continued)

Number	Milestone Title	Type (TPA/ DNFSB/PI)	Due Date	Actual Date	Forecast Date	Status/ Comments
M-34-27-T01 (S03-03-069)	Complete removal of 1,252 MTHM of SNF from K West Basin	TPA	5/31/03	5/28/03		Completed 5/28/03, 3 days ahead of schedule
M-34-28 (S03-03-070)	Complete removal of 1,619 MTHM from the K West Basin	TPA	12/31/03	1/13/04		Complete
M-34-25-T01 (S03-04-001)	Complete transfer of K East Basin SNF to K West Basin	TPA/PI	5/31/04		4/31/04	Working to complete by 4/31/04.
M-34-18B (S00-00-902)	Complete removal of all K Basin SNF	TPA/DNFSB/ PI	7/31/04		7/04	Working to complete 7/04.
S04-00-205, *CD4*	Complete ORR sludge transfer from K Basins		12/31/02		5/15/04	Missed. Will initiate with NLOP following completion of the RL-directed ORR.
M-34-10 (S04-01-215)	Complete sludge removal from K Basins	TPA/DNFSB/ PI	8/31/04		8/31/04	Scope and schedule for completing interim milestone subject to change based on revised sludge remedy involving treatment and packaging for WIPP disposal.
M-34-23 (S10-99-953)	Start K East water removal	TPA	9/30/04		9/30/04	See note below
S07-04-005	Consolidate spent fuel in the 200 Area	PI	9/30/04		9/30/04	On schedule

Milestone Achievement (continued)

Number	Milestone Title	Type (TPA/ DNFSB/PI)	Due Date	Actual Date	Forecast Date	Status/ Comments
M-34-09-T01 (S04-05-516)	Complete K Basins rack and canister removal	TPA	1/31/05		1/31/05	See note below
M-34-24 (S10-99-954)	Complete K East Basin water removal	TPA	6/30/05		9/30/05	See note below
M-34-22-T01 (S10-99-952)	Complete K West Basin water removal	TPA	9/30/05		8/31/06	See note below
M-34-21 (S10-99-951)	Initiate full-scale K West Basin water removal	TPA	2/1/05		10/31/05	See note below
S04-06-005	Transfer of K Basins to the River Corridor Contractor	PI	10/30/05		10/30/05	On schedule
M-34-00A (S10-99-955)	Complete removal of K Basin fuel / sludge / debris / water from K Basins	TPA (Major)	7/31/07		7/31/07	See note below

NOTE: Milestone subject to possible change based on accelerated K Basin sludge disposal and basin deactivation approach.